FIG. 1

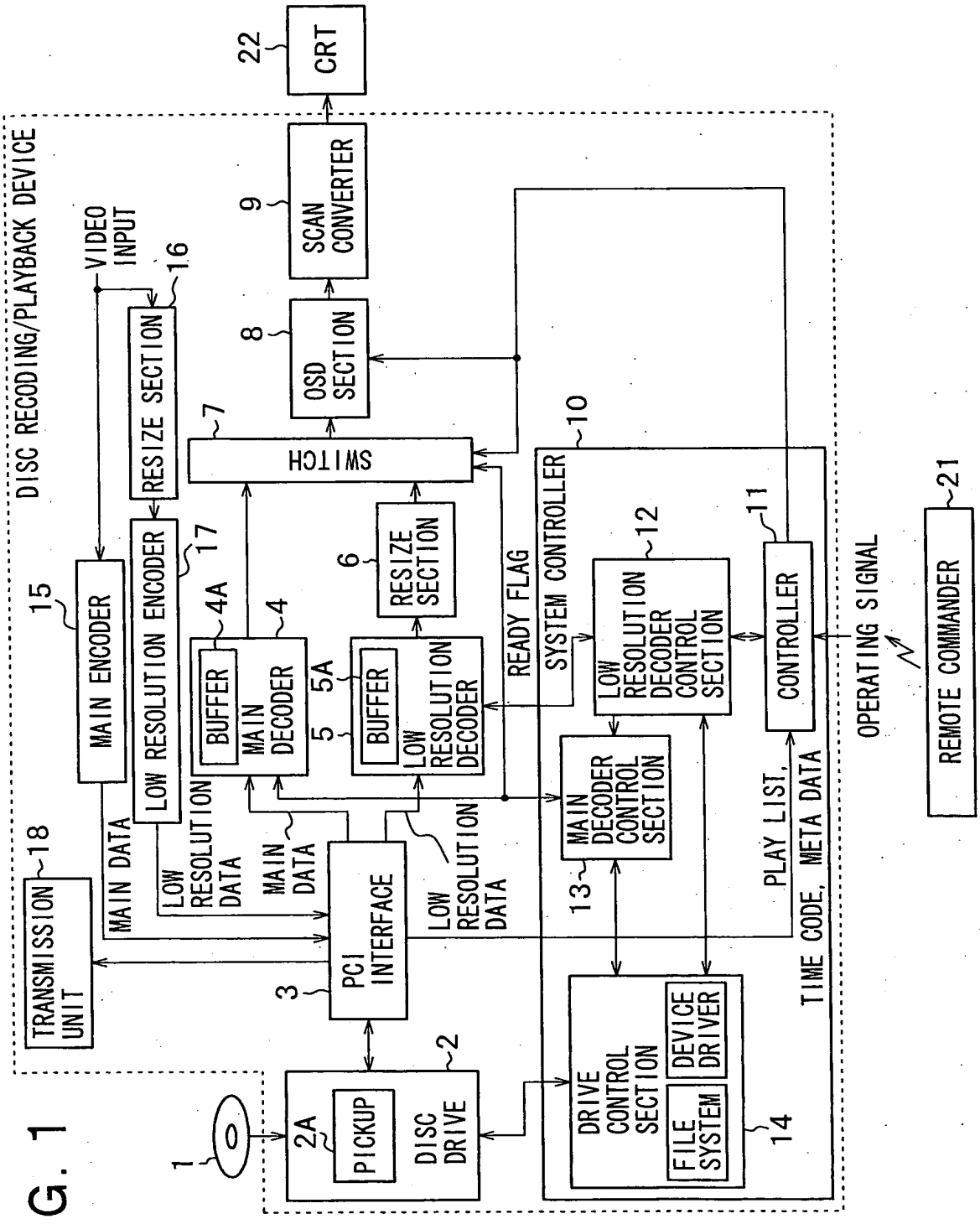

DISC RECODING/PLAYBACK DEVICE
TRANSMISSION UNIT
18
MAIN DATA
MAIN ENCODER
15
VIDEO INPUT
RESIZE SECTION
16
LOW RESOLUTION ENCODER
17
LOW RESOLUTION DATA
MAIN DATA
BUFFER
MAIN DECODER
4A
4
5
5A
BUFFER
LOW RESOLUTION DECODER
RESIZE SECTION
6
SWITCH
7
OSD SECTION
8
SCAN CONVERTER
9
22
CRT
READY FLAG
SYSTEM CONTROLLER
10
LOW RESOLUTION DECODER CONTROL SECTION
12
CONTROLLER
11
MAIN DECODER CONTROL SECTION
13
PCI INTERFACE
3
LOW RESOLUTION DATA
PLAY LIST, TIME CODE, META DATA
DRIVE CONTROL SECTION
FILE SYSTEM
DEVICE DRIVER
14
DISC DRIVE
2
2A
PICKUP
1
OPERATING SIGNAL
REMOTE COMMANDER
21

FIG. 2

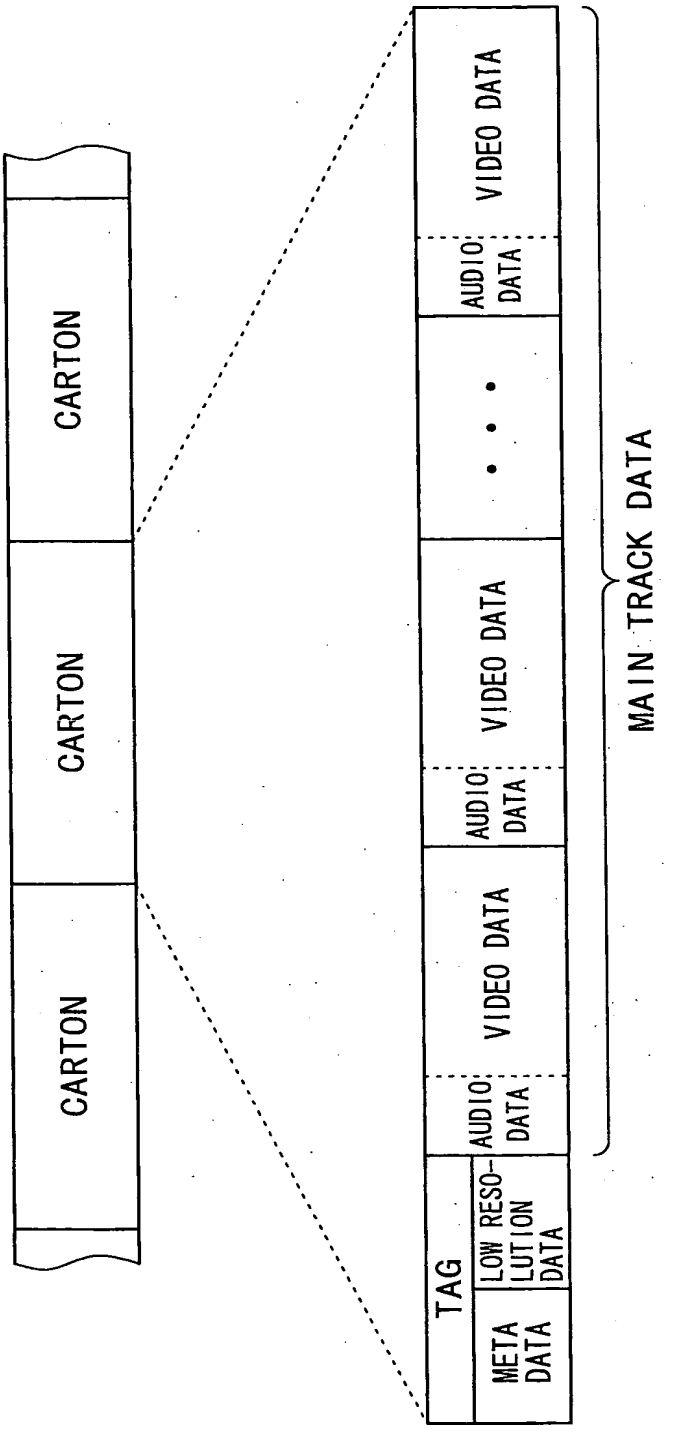

CARTON
CARTON
CARTON
TAG
META DATA
LOW RESO-LUTION DATA
AUDIO DATA
VIDEO DATA
AUDIO DATA
VIDEO DATA
• • •
AUDIO DATA
VIDEO DATA
MAIN TRACK DATA

FIG. 3

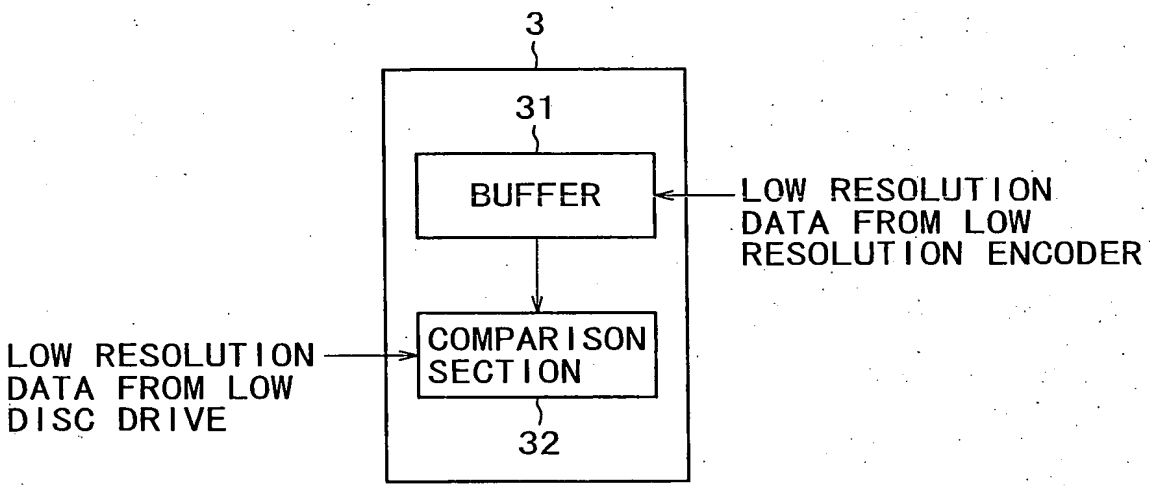

3
31
BUFFER
LOW RESOLUTION DATA FROM LOW RESOLUTION ENCODER
COMPARISON SECTION
LOW RESOLUTION DATA FROM LOW DISC DRIVE
32

FIG. 4

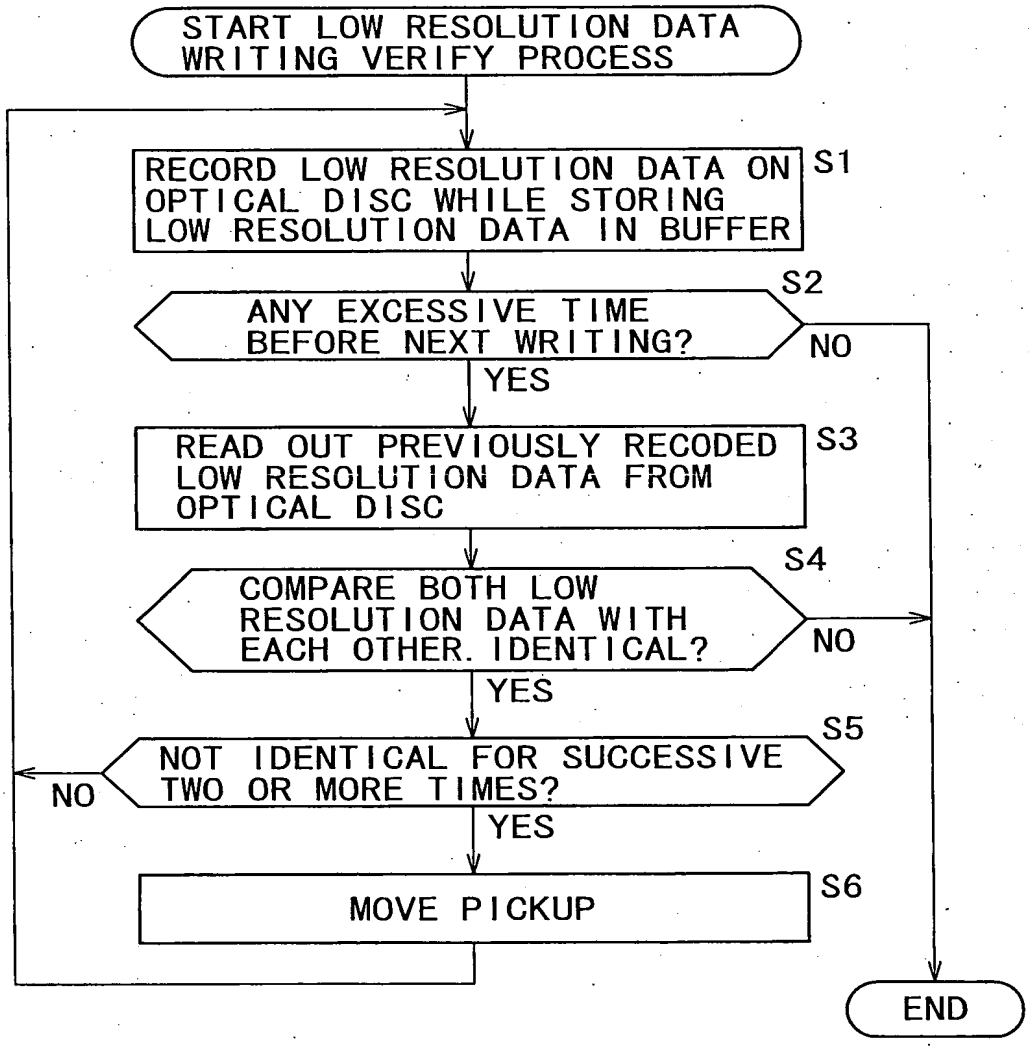

START LOW RESOLUTION DATA WRITING VERIFY PROCESS
RECORD LOW RESOLUTION DATA ON OPTICAL DISC WHILE STORING LOW RESOLUTION DATA IN BUFFER
S1
ANY EXCESSIVE TIME BEFORE NEXT WRITING?
S2
NO
YES
READ OUT PREVIOUSLY RECODED LOW RESOLUTION DATA FROM OPTICAL DISC
S3
COMPARE BOTH LOW RESOLUTION DATA WITH EACH OTHER. IDENTICAL?
S4
NO
YES
NOT IDENTICAL FOR SUCCESSIVE TWO OR MORE TIMES?
S5
NO
YES
MOVE PICKUP
S6
END

FIG. 5

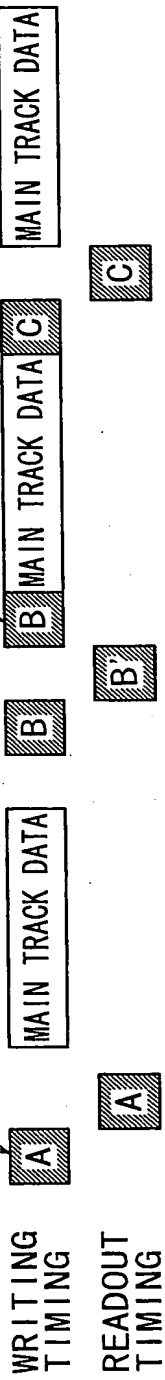

LOW RESOLUTION DATA
REWRITE
MAIN TRACK DATA
MAIN TRACK DATA
A
B
B
C
B'
C
WRITING TIMING
READOUT TIMING
A

FIG. 6

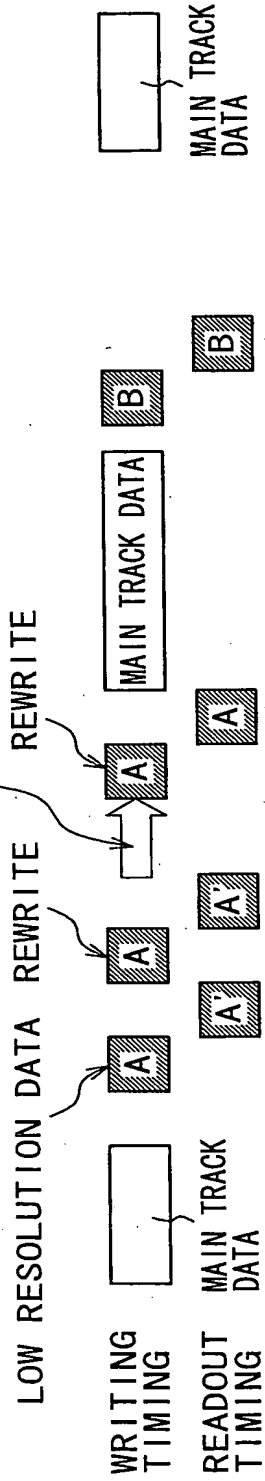

MAIN TRACK DATA
B'
B
MAIN TRACK DATA
A
A'
A
A'
A
REWRITE
MOVE PICKUP
REWRITE
LOW RESOLUTION DATA
WRITING TIMING
READOUT TIMING
MAIN TRACK DATA

FIG. 7

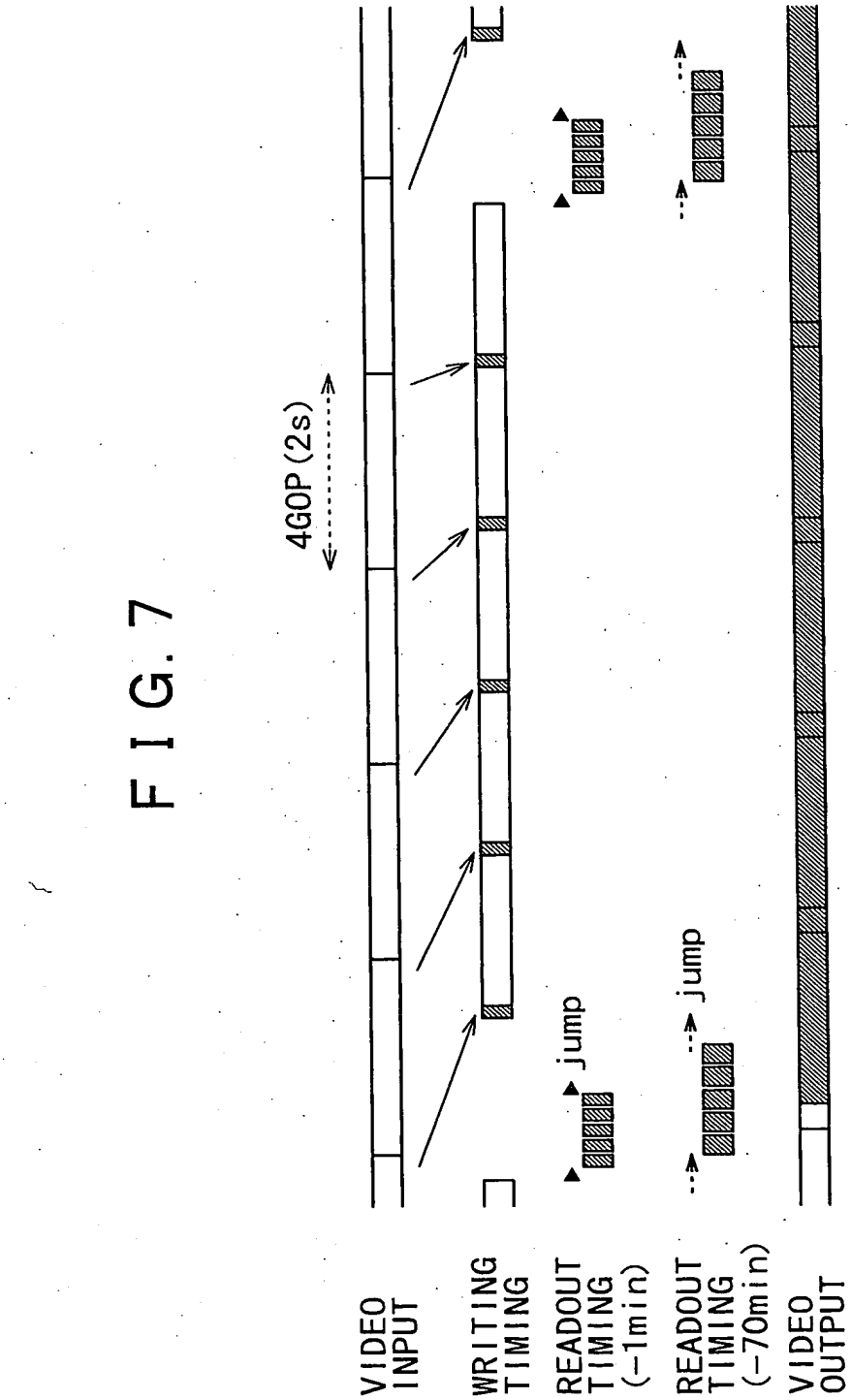

4GOP (2s)
VIDEO INPUT
WRITING TIMING
READOUT TIMING (-1min)
READOUT TIMING (-70min)
VIDEO OUTPUT
jump
jump

FIG. 8

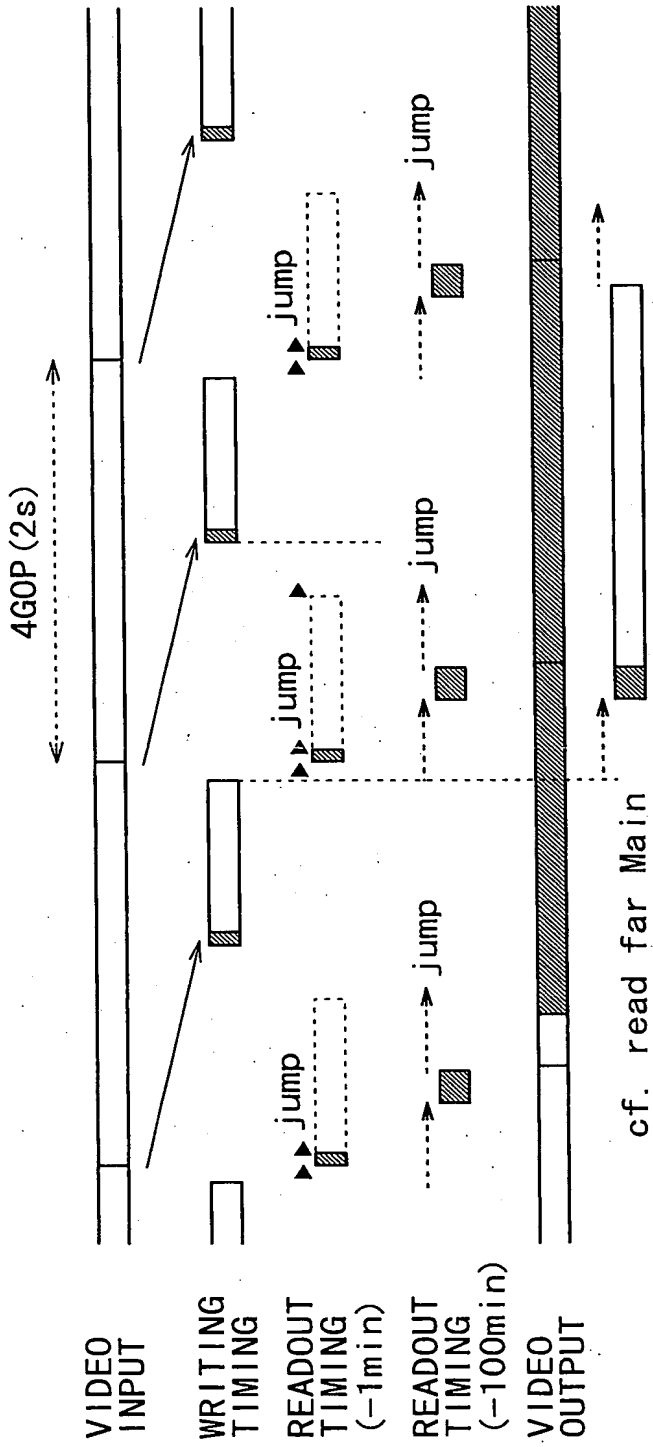

4GOP (2s)
jump
jump
jump
jump
jump
VIDEO INPUT
WRITING TIMING
READOUT TIMING (-1min)
READOUT TIMING (-100min)
VIDEO OUTPUT
cf. read far Main

FIG. 9

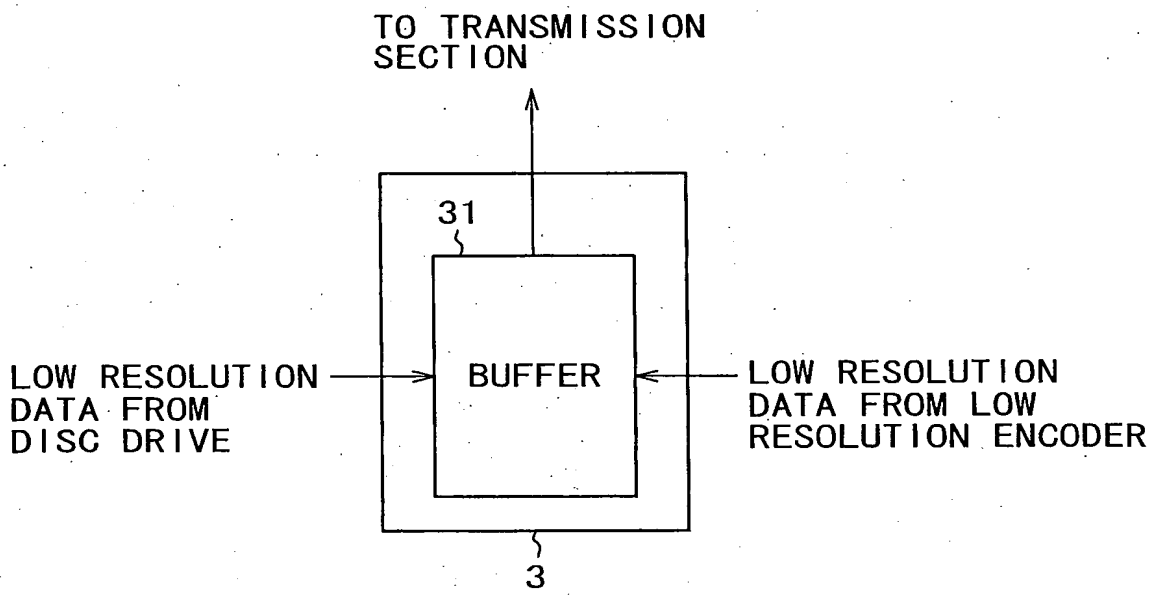

TO TRANSMISSION SECTION
31
BUFFER
LOW RESOLUTION DATA FROM DISC DRIVE
LOW RESOLUTION DATA FROM LOW RESOLUTION ENCODER
3

FIG. 10

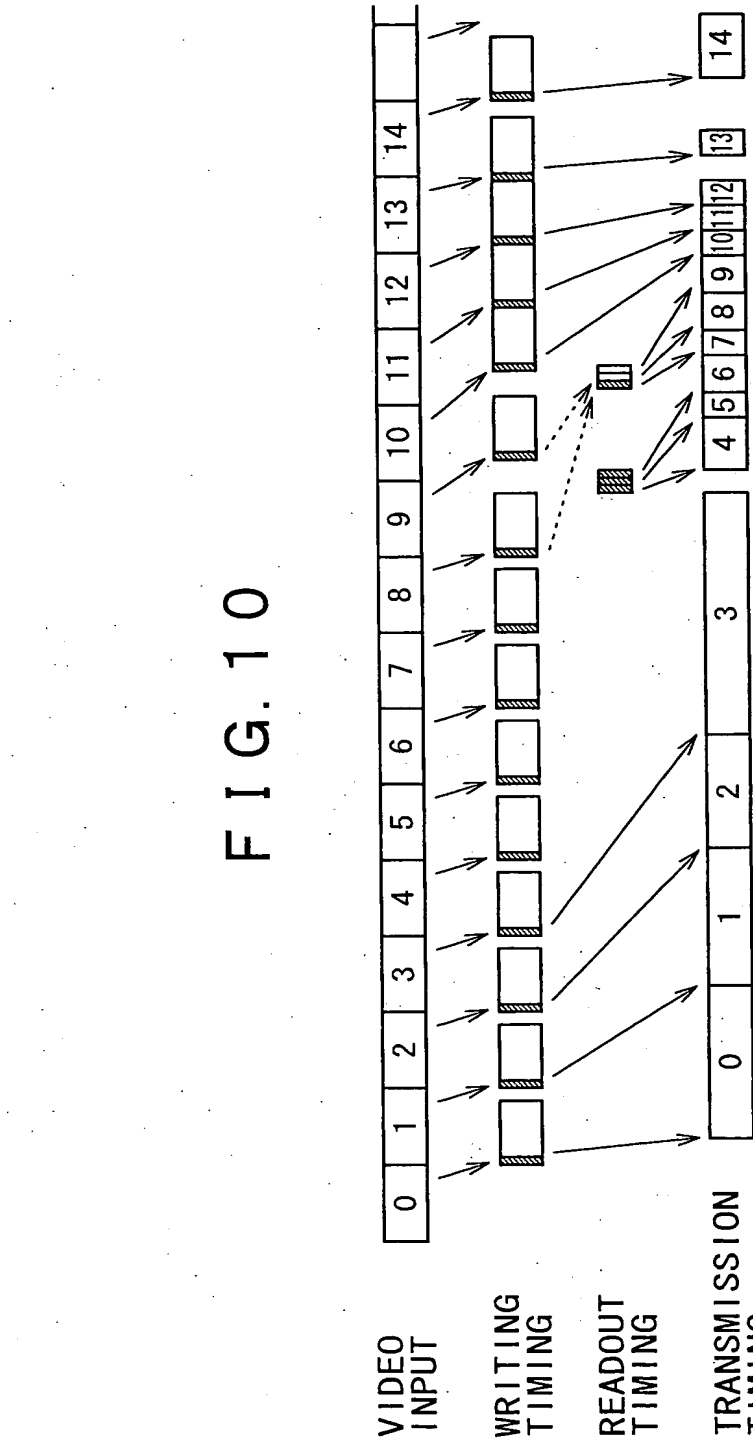

VIDEO INPUT
WRITING TIMING
READOUT TIMING
TRANSMISSION TIMING
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14

FIG. 11

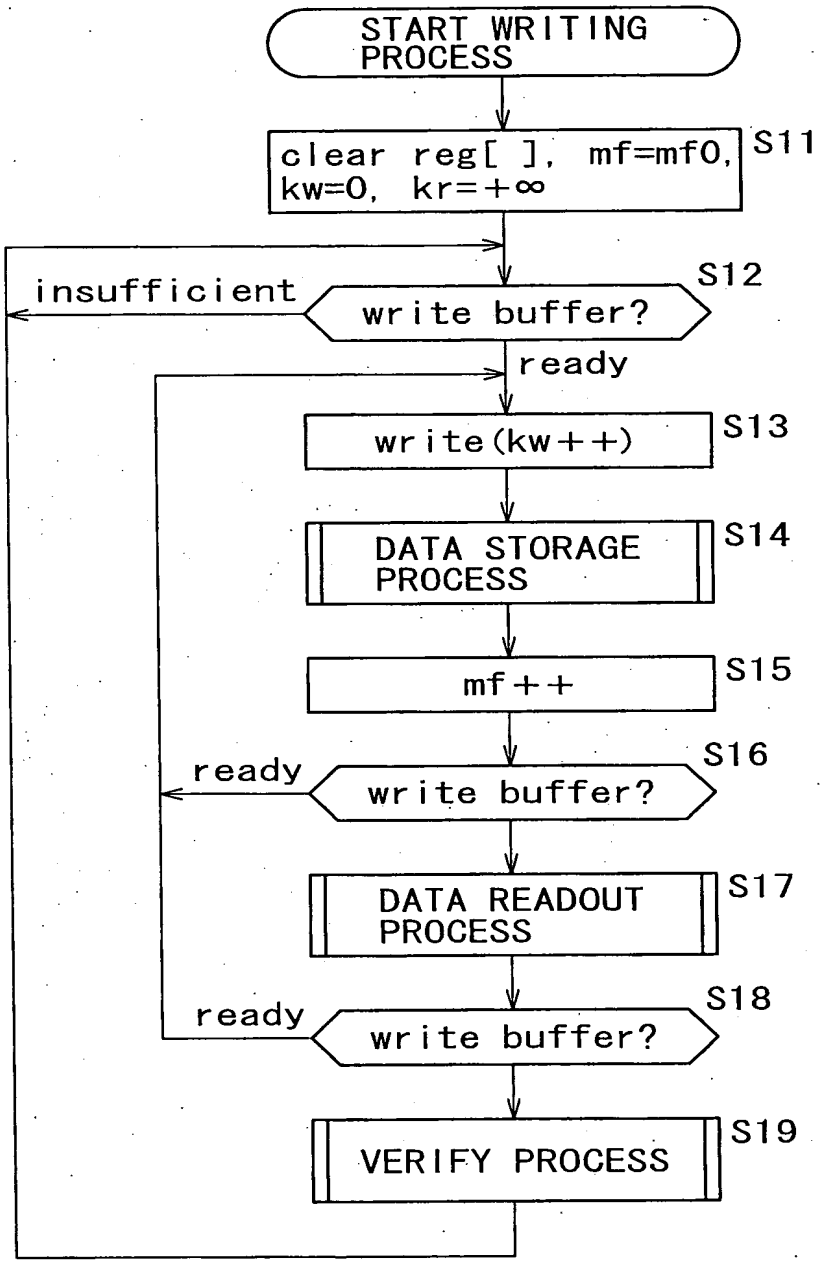

START WRITING PROCESS
clear reg[ ], mf=mf0, kw=0, kr=+∞
S11
insufficient
write buffer?
S12
ready
write(kw++)
S13
DATA STORAGE PROCESS
S14
mf++
S15
ready
write buffer?
S16
DATA READOUT PROCESS
S17
ready
write buffer?
S18
VERIFY PROCESS
S19

FIG. 12

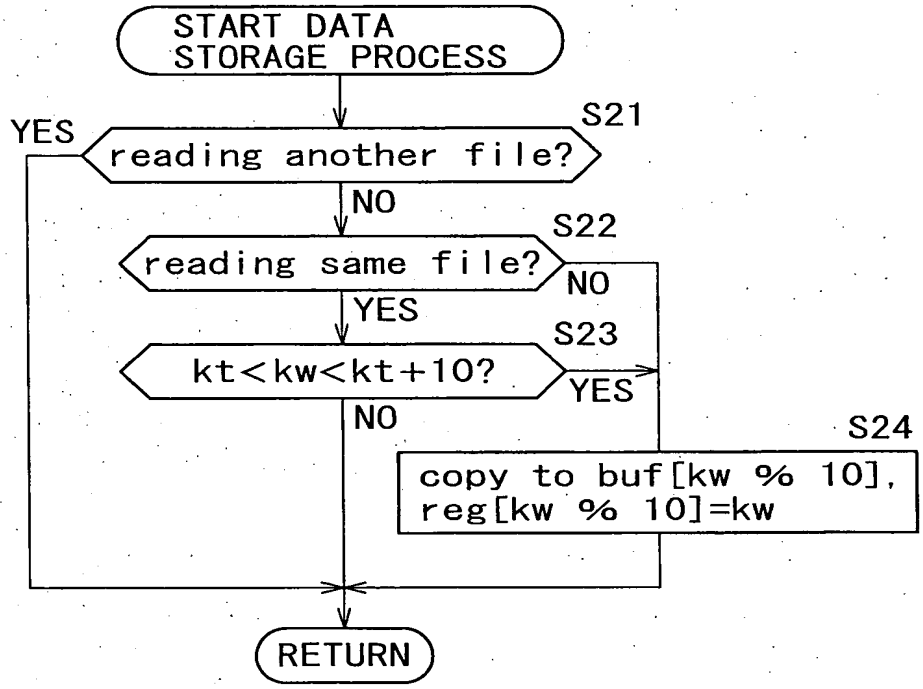

START DATA STORAGE PROCESS
S21
YES
reading another file?
NO
S22
reading same file?
NO
YES
S23
kt<kw<kt+10?
YES
NO
S24
copy to buf[kw % 10], reg[kw % 10]=kw
RETURN

FIG. 13

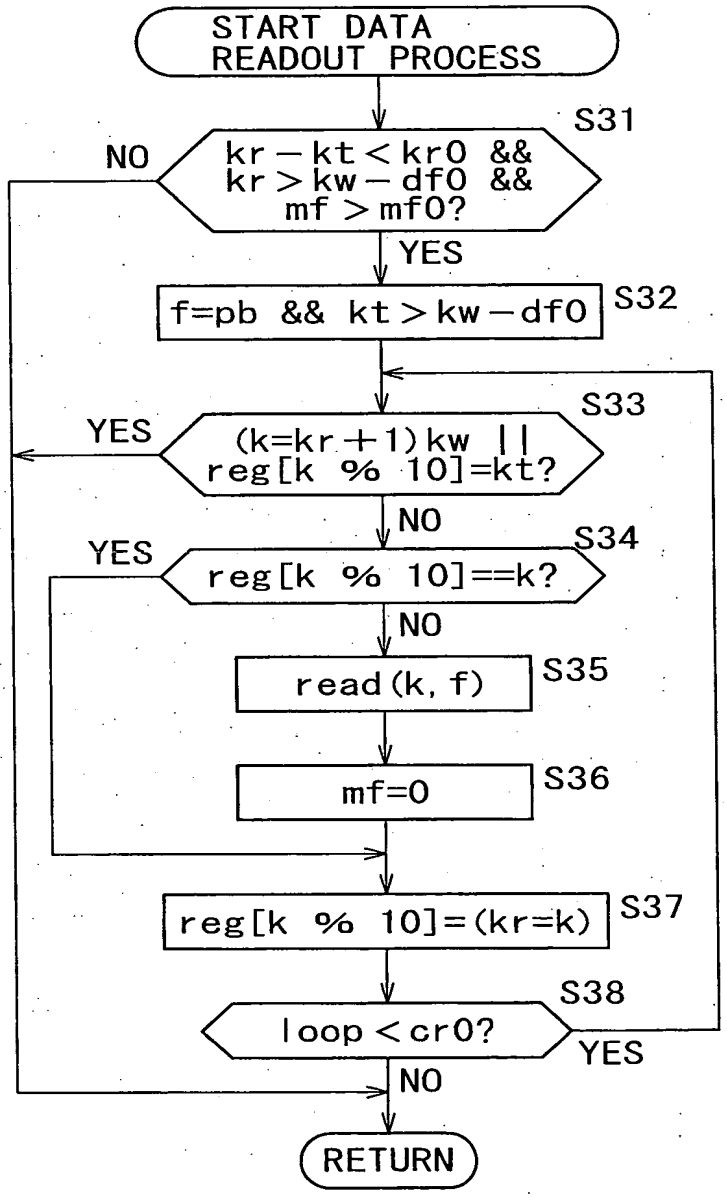

START DATA READOUT PROCESS
S31
kr−kt<kr0 && kr>kw−df0 && mf>mf0?
NO
YES
f=pb && kt>kw−df0
S32
S33
(k=kr+1)kw || reg[k % 10]=kt?
YES
NO
S34
reg[k % 10]==k?
YES
NO
read(k, f)
S35
mf=0
S36
reg[k % 10]=(kr=k)
S37
S38
loop<cr0?
YES
NO
RETURN

FIG. 14

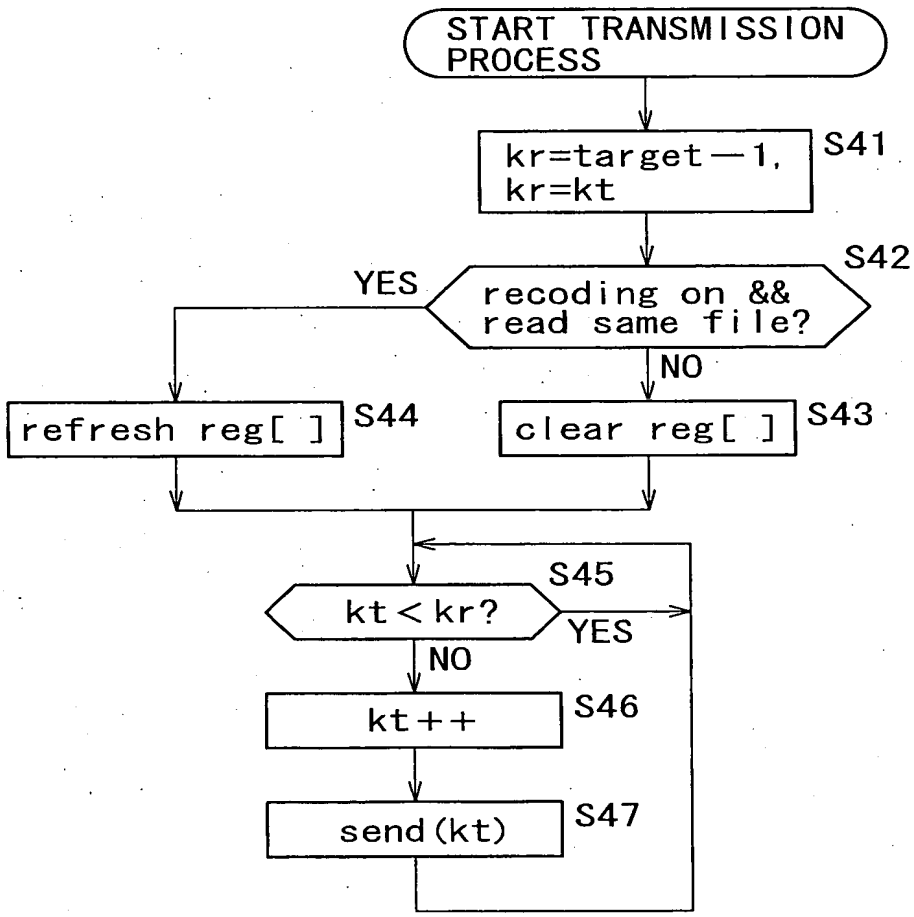

START TRANSMISSION PROCESS
kr=target−1,
kr=kt
S41
recoding on &&
read same file?
S42
YES
NO
refresh reg[ ]
S44
clear reg[ ]
S43
kt<kr?
S45
YES
NO
kt++
S46
send(kt)
S47

FIG. 15

MODE	mf0	kr0	COMMENTS
LOW SEED≦128kbps	15	3	READ AT INTERVAL OF 30 SECONDS OR MORE
MIDDLE SPEED, IMAGE PLAYBACK	5	3	READ NOT FREQUENTLY
HIGH SEED≦2Mbps	1	5	READ AS MUCH AS POSSIBLE

FIG. 16

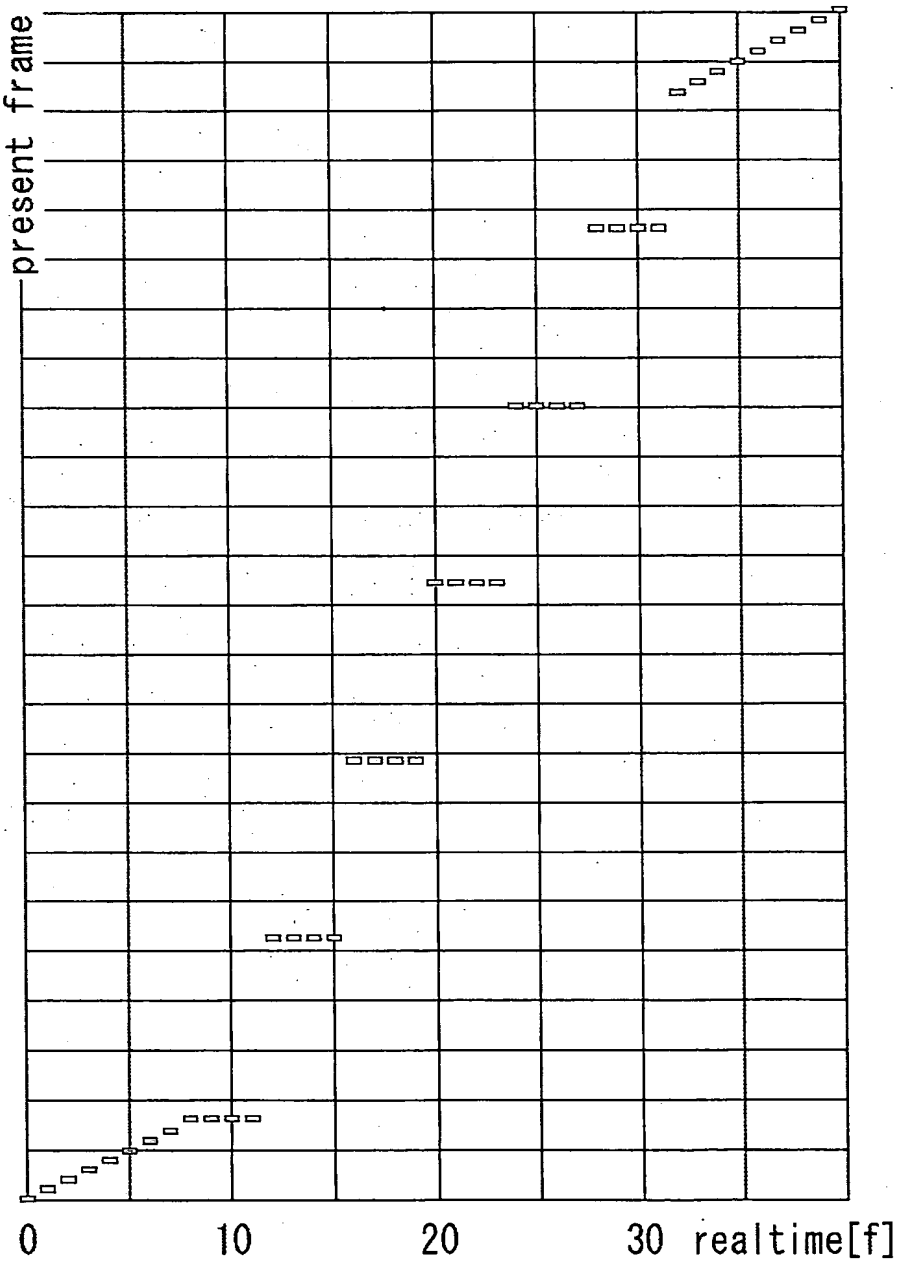


FIG. 17

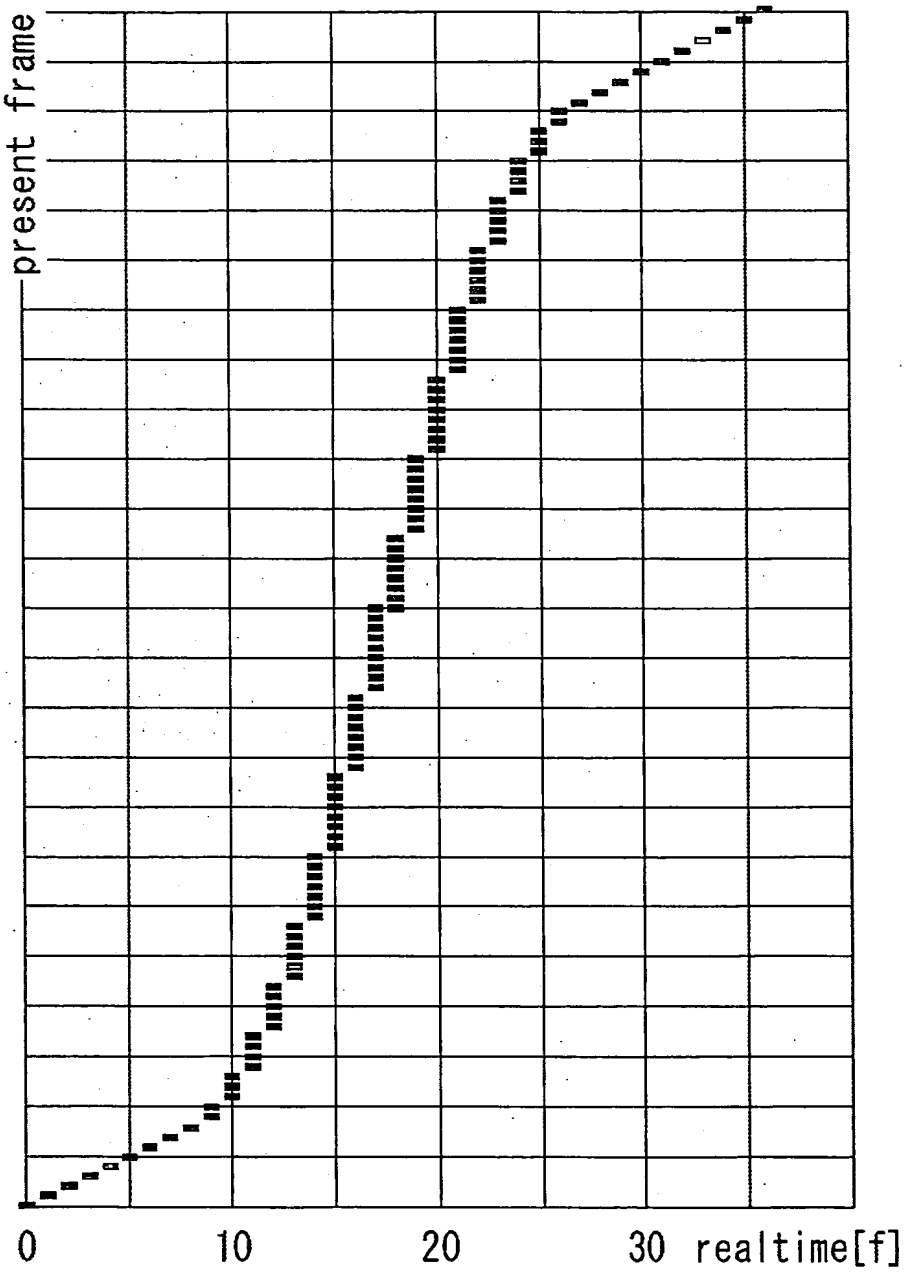


FIG. 18

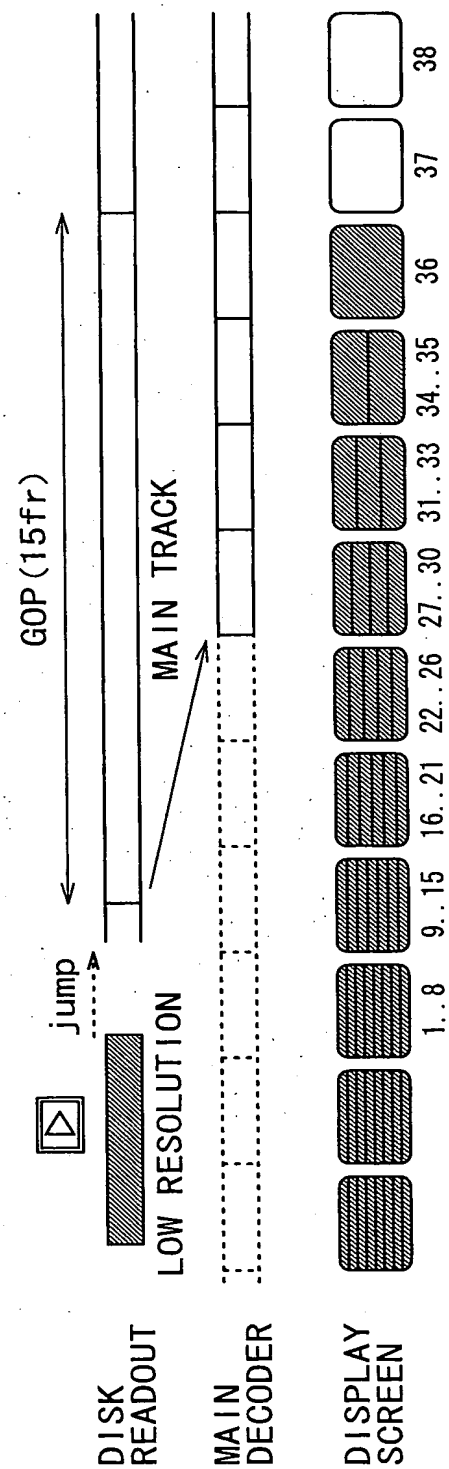

GOP(15fr)
jump
MAIN TRACK
LOW RESOLUTION
DISK READOUT
MAIN DECODER
DISPLAY SCREEN
1..8
9..15
16..21
22..26
27..30
31..33
34..35
36
37
38

FIG. 19

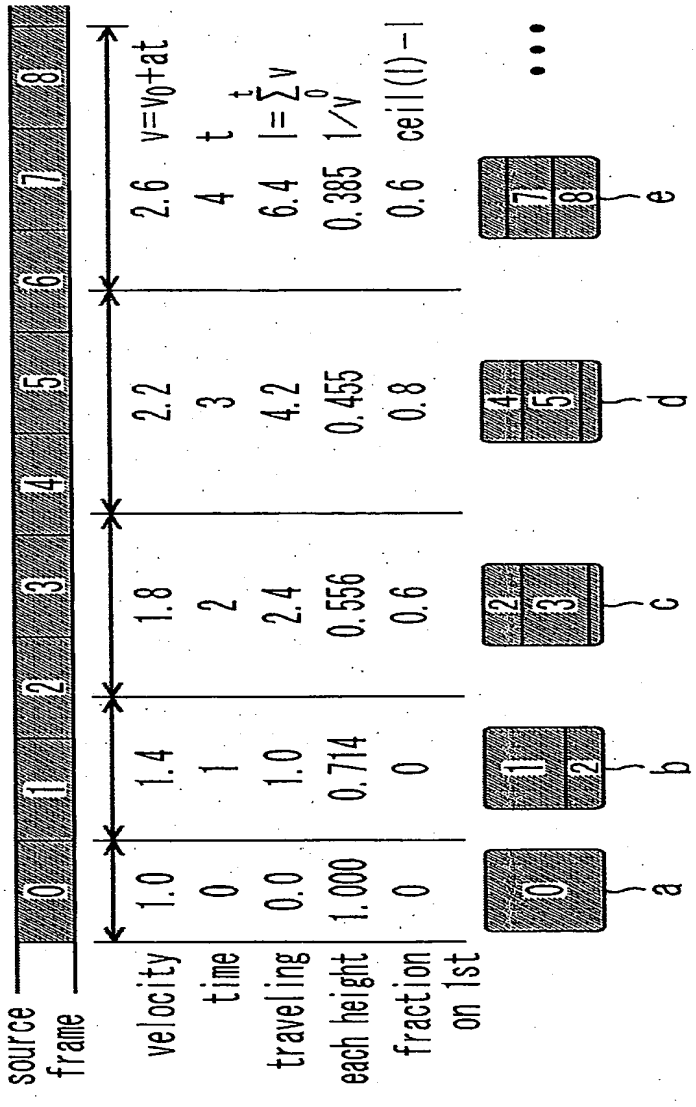

source frame
0
1
2
3
4
5
6
7
8
velocity
time
traveling each height
fraction on 1st
1.0
0
0.0
1.000
0
1.4
1
1.0
0.714
0
1.8
2
2.4
0.556
0.6
2.2
3
4.2
0.455
0.8
2.6
4
6.4
0.385
0.6
v=v0+at
t
l=∑v
1/v
ceil(l)-l
a
b
c
d
e

FIG. 20

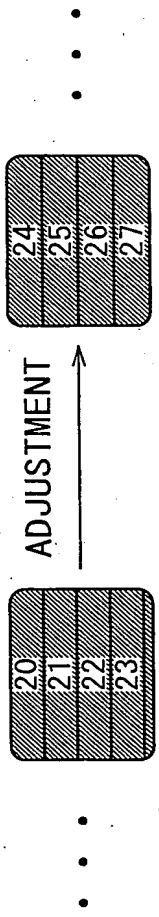


FIG. 21

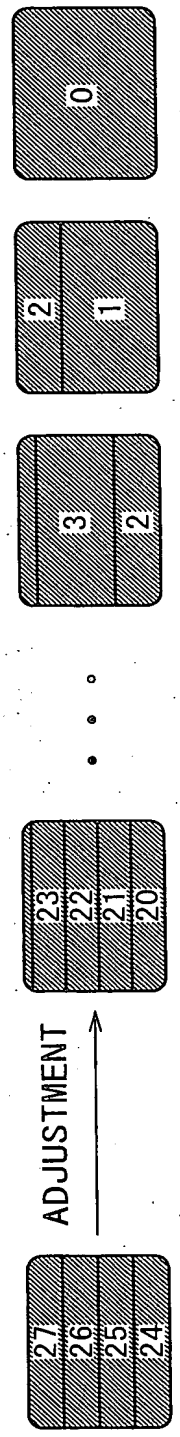
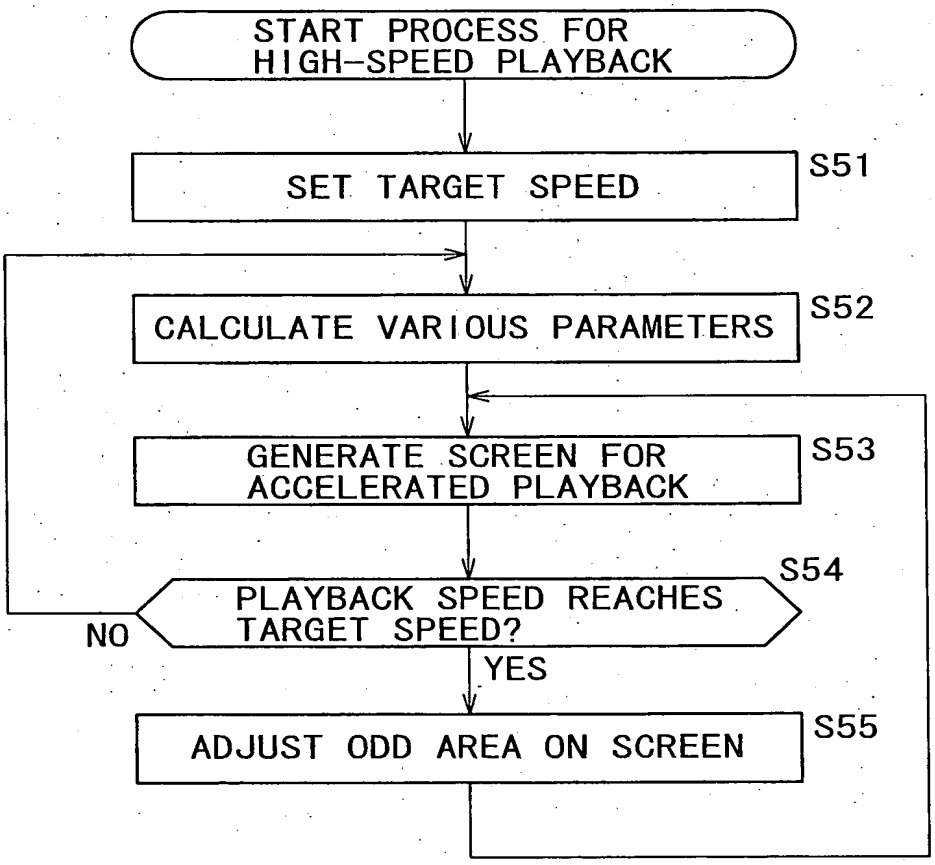


FIG. 22


START PROCESS FOR HIGH-SPEED PLAYBACK
SET TARGET SPEED
S51
CALCULATE VARIOUS PARAMETERS
S52
GENERATE SCREEN FOR ACCELERATED PLAYBACK
S53
PLAYBACK SPEED REACHES TARGET SPEED?
S54
NO
YES
ADJUST ODD AREA ON SCREEN
S55